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AUTHOR Johnson, Heidi; Churchill, Lynn D.
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ABSTRACT

This study compared the effectiveness of the use of computer-based training (CBT) and instructor-based training (IBT) to train teaching assistants how to use the word processing program Microsoft Word. Thirteen faculty, staff, and graduate student volunteers served as subjects and were randomly assigned to either the computer-based or instructor-based section. Following 10 hours of instruction, students completed a course evaluation and three exercises consisting of an overview of concepts to be covered and a series of commands to be performed on a document. Participants also completed a background survey and a course evaluation questionnaire. Instructor observations on the relative ease for each group of accomplishing various tasks were also used in the assessment. Results demonstrated that the IBT group mastered overall Microsoft Word skills to a greater depth than the CBT group, and suggestions for improving the effectiveness of the computer-based tutorial are offered. Appendixes include the promotional flyer for the class, an outline of course content, sample exercises used for evaluation, and copies of the participant background survey and the questionnaire. (MES)

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The materials in the Special Collection on the Training of Teaching Assistants were developed through the active efforts of numerous educators who first met at the 1986 National Conference on the Institutional Responsibilities and Responses in the Employment and Education of Teaching Assistants held at the Ohio State University. Assisted by more than 80 individuals, the committee chairs listed below were able to establish the collection which will be developed and maintained by the ERIC Clearinghouse for Higher Education. This arrangement will enable faculty members, faculty developers, administrators, TA supervisors, and graduate teaching assistants to have access to TA training materials produced by institutions across the nation.

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A Comparison of Computer Based Training vs Instructor Based Training Using Microsoft Word

Heidi Johnson
Staff Associate

and

Dr. Lynn Churchill
CAI Research and Development Coordinator

University of Washington
Center for Instructional Development and Research

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University of Washington
Center for Instructional Development & Research

Comparison of Computer Based Training vs Instructor Based Training using Microsoft Word

Heidi Johnson
and
Lynn Churchill

INTRODUCTION

The recent demand by University of Washington faculty, staff and students to be trained efficiently and effectively in wordprocessing prompted the Center for Instructional Development and Research (CIDR) to pursue an analysis of methods for teaching wordprocessing. This study compared instruction of Microsoft Word via Computer Based Training (CBT) and traditional Instructor Based Training (IBT). Microsoft's Learning Word version 2.0 was used for the CBT and the content for the instructor based course followed the CBT's scope and sequence.

This evaluation compares the effectiveness of Computer Based Training to Instructor Based Training. Effectiveness was assessed in terms of the amount of time that it required the participants to complete specific exercises and the amount of difficulty encountered in accomplishing each task. Aspects of the participants' feelings towards the exercises were also assessed. Various forms of self assessment and instructor observation were used.

METHODOLOGY

Timeline:

Instruction and data collection occurred between October 23, 1985 and November 7, 1985. The training involved faculty, staff and graduate students at the University of Washington who were interested in learning Microsoft Word.

Selection of Participants:

Flyers were posted across the University of Wasnington campus in order to inform individuals on two free sections of a Microsoft Word wordprocessing class. The actual flyer is included in Appendix A. Interested respondents were randomly assigned to one of the sections.

Facilities:

The facility was the Center for Instructional Development and Research microcomputer lab which is specially designed for computer aided learning. Each participant worked on an IBM-PC equipped with 640k, a graphics printer and a color monitor. The instructor presented material via large classroom monitors and an overhead projector. The monitors and overhead projector were used to model specific commands, to present examples and to clarify questions.

Instructor:

The instructor was the same person for both sections. She has had several years prior experience teaching wordprocessing courses. Additional information about the instructor can be provided upon request.

Instruction:

The Computer Based Training (CBT) group met on Mondays and Wednesdays whereas the Instructor Based Training (IBT) group met on Tuesdays and Thursdays. Both courses were offered from 10:30 to 12:30. A total of ten hours of instruction was provided each group.

Instruction began in both groups with the purpose of the course, an introduction to the lab facility and a brief overview of both computer hardware and software. The Instructor Based Training (IBT) group proceeded through lesson topics in the same order as the Computer Based Training (CBT) group. The IBT group did not cover how to work the Learning Word CBT. The Instructor Based Training group practiced exercises on the same concepts as the Computer Based Training group. The words used within each exercise provided the IBT group did not match the exact words used in the Learning Word CBT.

After the first day of instruction, each group began with a review of what was covered the day before. They were then presented with new materials and allowed to practice. Both groups were allowed to ask questions if they had

difficulty on a particular concept or skill. The manual was also available for reference.

The topics covered and the sequence of the instruction are listed in Appendix B.

Exercises:

Three exercises were developed using assessments commonly used by temporary service agencies who provide wordprocessing training and or hire individuals with wordprocessing skills. Each exercise was composed of three parts: (1) an overview of the concepts to be covered, (2) a series of questions on commands to be performed on the document provided and (3) a questionnaire. The questionnaire was used to access the perceived ease of accomplishing each task. The questionnaire used the following four-part scale:

E: Easy (Performed command without looking it up.)
RE: Relatively Easy (Unable to remember at first but figured it out, without looking.)
D: Difficult (Performed command but looked it up.)
I: Impossible (Never accomplished the task.)

The exercises also included a comment section for positive and negative suggestions as to how the instruction could be improved. A final course evaluation was also completed. A sample of each exercise is included in Appendix C and the final evaluation is in Appendix D.

RESULTS

Description of Participants:

There were six participants in the Computer Based Training group and seven participants in the Instructor based Training group. Reference to these participants is by Subject C1 to Subject C6 and Subject I1 to Subject I7 respectively . Before instruction began, a participant who could not make the Monday and Wednesday section was switched to the Tuesday and Thursday section.

Table 1a and Table 1b summarize four major evaluation categories from the background surveys of the CBT and IBT participants respectively. A copy of the entire background survey sheet can be found in Appendix E.

Table 1a

Computer Based Training
Participants' Background Information

Subject	Age	Experience	Word exp.	Type wpm
Subject C1	55-64	No	No	40-60
Subject C2	44-54	No	No	40-60
Subject C3	44-54	TRS-80*	No	80+
Subject C4	44-54?	IBM PC*	Yes	40-60
Subject C5	35-44	TRS-80*	No	40-60
Subject C6	35-44	Wordstar	No	40-60

* Participant's did not remember the name of the wordprocessor used on this machine.

Table 1b

Instructor Based Training
Participants' Background Information

Subject	Age	Experience	Word exp.	Type wpm
Subject I1	55-64	No	No	60-80
Subject I2	44-54	Wordstar	No	0-20
Subject I3	44-54	Benchmark	No	40-60
Subject I4	44-54	No	No	40-60
Subject I5	35-44	Scriptsit	No	60-80
Subject I6	35-44	Word	Yes	60-80
Subject I7	35-44	Systal	No	80+

Exercises:

The results of the exercises are summarized from the perspective of the actual subject and instructor. Results of the self evaluations of performance and the estimated time it required to complete each exercise are summarized in tables for each exercise.

Exercise #1:

Exercise #1 tested each participant's level of comprehension of screen areas, cursor movement, editing and revising. Exercise #1 covers material similar to that found within the following Learning Word Menus:

Introduction: Exploring the Screen
Choosing Commands
Selecting Text

Continued:

The Basics: Entering
Revising Text: Deleting and Inserting
Scrolling

Summary of Participant and Instructor Evaluations:

Table 2a and Table 2b provide a summary of the participants' self evaluation of their competency on exercise #1.

Table 2a

Summary of Computer Based Training Participants' Competency of cursor movement, editing and revising.

Questions	Subject's response					
	C1	C2	C3	C4	C5	C6
1. The areas of the screen.	RE	RE	E	RE	E-D	E
2. Loading a document.	RE	RE	E	RE	I	E
3. Correct misspelled words.	RE	RE	E	E	RE	E
4. Creating a new paragraph.	E	D	D	D	E	E
5. Deleting a paragraph.	D	D	E	RE	E	E
6. Entering text.	RE	E	E	E	RE	E
7. Moving the cursor.	E	E	E	E	RE	E
8. Saving the document.	D	D	RE	D	I	E

Key: E: Easy (Performed command without looking it up.)
RE: Relatively Easy (Unable to remember at first but figured it out, without looking.)
D: Difficult (Performed command but looked it up.)
I: Impossible (Never accomplished the task.)

Instructor Observations:

The Computer Based Training group accomplisned the following tasks with relative ease:

1. Typing in text and working with the keyboard.

2. Moving the cursor as they typed, not in the overtype mode.

The Computer Based Training group had difficulty in the following areas:

1. The entire group was not not sure how to begin Word. All of the subjects did not understand that they needed to use Program disk #1, the actual program, to do their wordprocessing. Once in the Word package, the CBT group had very little transfer of commands and were not even sure where to begin editing text.

2. They did not remember how to delete characters and needed to be reminded of the arrow keys to move around the screen. They also did not remember what the function keys did.

3. Saving the file. (This command had not been covered in the CBT at this point.)

Table 2b

Subject Summary: Instructor Based Training competency of cursor movement, editing and revising.

Questions	Subject's response						
	I1	I2	I3	I4	I5	I6	I7
1. The areas of the screen.	I	RE	E	E	E	E	E
2. Loading a document.	RE	E	E	RE	D	E	E
3. Correcting misspelled words.	RE	E	E	E	E	E	E
4. Creating a new paragraph.	D	E	RE	RE	E	RE	RE
5. Deleting a paragraph.	RE	E	E	E	RE	E	E
6. Entering text.	RE	E	RE	E	RE	E	E
7. Moving the cursor.	E	E	E	E	E	E	E
8. Saving the document.	D	D	E	D	D	E	D

Key: E: Easy (Performed command without looking it up.)
RE: Relatively Easy (Unable to remember at first but figured it out, without looking.)
D: Difficult (Performed command but looked it up.)
I: Impossible (Never accomplished the task.)

Instructor observations:

The Instructor Based Training group accomplished the following tasks with relative ease:

1. The moving the cursor with the arrow key funtions.

2. Entering and deleting text.

The Instructor Based Training group had difficulty in the following areas:

1. They had difficultly loading a file.

2. The group as a whole did not remember the function keys.

3. Saving the file. (This command had not been covered in class.)

Summary of Exercise #1 Time Results:

Participants were asked to record the approximate time that it required them to complete each exercise. The Computer Based Training (CBT) group required approximately 40 minutes to complete this task. The Instructor Based Training (IBT) group completed the task in approximately 30 minutes. Table 3a and Table 3b provide a summary of the time to complete Exercise #1 for the CBT group and IBT group respectively. Subjects are in descending order according to time.

Table 3a

Computer Based Training
Approximate Time to Complete Exercise #1*

Subject	Time
Subject C2	60 min
Subject C1	40 min
Subject C5	40 min
Subject C4	35 min
Subject C3	30 min
Subject C6	30 min
Average	40 min

* Data is listed in descending order according to time in minutes.

Table 3b

Instructor Based Training
Approximate Time to Complete Exercise #1*

Subject	Time
Subject I4	60 min
Subject I7	40 min
Subject I1	40 min
Subject I2	25 min
Subject I5	20 min
Subject I3	15 min
Subject I6	10 min
Average	30 min

* Data is listed in descending order according to time in minutes.

Exercise #2:

Exercise #2 tested the level of comprehension on changing the style and arrangement of a paper through the

various formatting characters and paragraphs commands. This exercise covers the following Learning Word Menus:

The Basics: Formatting: Changing the Look
Italics, Bold, Etc.
Centering and Justifying
Indenting
Setting Line Spacing

Undoing Changes
Storing Documents

Summary of Participant and Instructor Evaluations:

Table 4a and 4b summarize the participants' perceptions and instructor observations of performance on the commands in Exercise #2.

Table 4a

Subject Summary: Computer Based Training Competence on Formatting Characters and Paragraphs.

Questions	Subject's response					
	C1	C2	C3	C4	C5	C6
1. Characters to bold.	D	E	E	RE	E	E
2. Characters to italic	D	E	E	RE	E	E
3. Underlining characters	D	E	D	RE	E	E
4. Indenting paragraphs	D	RE	RE	RE	D	RE
5. Changing the line spacing	D	D	RE	RE	D	RE
6. Centering Text.	D	RE	RE	RE	E	E

Key: E: Easy (Performed command without looking it up.)
RE: Relatively Easy (Unable to remember at first but figured it out, without looking.)
D: Difficult (Performed command but looked it up.)
I: Impossible (Never accomplished the task.)

Instructor Observations:

Subject C1 had difficulty with all of exercise #2. The rest of the Computer Based Training group accomplished the following tasks with relative ease:

1. Entering the file.

2. Changing the characters to bold and italic.

The Computer Based Training group had difficulty in the following areas:

1. They did not remember the function key codes.

2. Participants had difficulty remembering the speed formatting commands. Tasks were performed by using all of the menus rather than the alt functions.

3. They did not know how to indent the first line five spaces.

4. In centering the paragraph, some tried to do this manually like on a typewriter. Others changed so many commands that their margins changed and they did not know what to do to correct the errors they had made. Subjects C4, C7, C1 had to continually go back to the original file and begin again before they saved their final file.

Table 4b

Subject Summary: Instructor Based Training Competence on Formatting Characters and Paragraphs.

Questions	Subject's response						
	I1	I2	I3	I4	I5	I6	I7
1. Characters to bold.	RE	E	E	D	E	E	E
2. Characters to italic	D	E	E	D	E	E	E
3. Underlining characters	RE	E	E	D	E	E	E
4. Indenting paragraphs	I	RE	RE	D	E	E	E
5. Changing the line spacing	D	RE	E	D	E	E	E
6. Centering Text.	RE	RE	E	D	E	E	E

Key: E: Easy (Performed command without looking it up.)
RE: Relatively Easy (Unable to remember at first but figured it out, without looking.)
D: Difficult (Performed command but looked it up.)
I: Impossible (Never accomplished the task.)

Instructor Observations:

Subject I4 had difficulty with all of exercise #2. The rest of the Instructor Based Training group accomplished the following tasks with relative ease:

1. Entering the file.

2. Changing characters to bold, italics and underlining characters.

The Instructor Based Training group had difficulty in the following areas:

1. The most difficulty they had was in indenting the first line five spaces. They did not read all of the items in the Format Paragraph command. Subject I3 was the only person to use the tab key to indent the first line.

2. Some of the people used the speed formatting commands while others used menus to perform all of their commands.

Summary of Exercise #2 Time Results:

The Computer Based Training group on the average required 33 minutes to complete the task and the Instructor Based Training group required 17 minutes. Table 5a and 5b summarize the approximate time individuals needed to complete Exercise #2.

Table 5a

Computer Based Training
Approximate Time to Complete Exercise #2*

Subject	Time
Subject C2	45 min
Subject C1	40 min
Subject C4	35 min
Subject C6	30 min
Subject C3	25 min
Subject C5	25 min
Average	33 minutes

* Data in descending order according to time in minutes.

Table 5b

Instructor Based Training
Approximate Time to Complete Exercise #2*

Subject	Time
Subject I1	45 min
Subject I4	25 min
Subject I2	17 min
Subject I3	16 min
Subject I7	10 min
Subject I5	5 min
Subject I6	3 min
Average	17 minutes

* Data in descending order according to time in minutes.

Exercise #3:

Exercise #3 reviewed concepts from Exercise #1 and Exercise #2 as well as these additional commands: copying and moving, windows, searching and replacing, undoing changes, using the glossary and printing. In addition, this exercise covers the following Learning Word Menus:

The Basics:	Undoing Changes Printing
More Word Skills:	Copying and Moving Windows: Two Views at Once Searching and Replacing Using the Glossary

Summary of Participant and Instructor Evaluations:

Tables 6a, 6b, 6c and Table 7a, 7b, 7c provide a summary of participants' feelings related to tneir level of competence in completing the commands required for Exercise #3. Because of illness, Subject I4 did not complete Exercise #3 and is therefore not included in the results.

Table 6a

Subject Summary: Computer Based Training
Competence on Creating a Document, Entering Text
and Moving the Cursor

Questions	Subject's response					
	C1	C2	C3	C4	C5	C6
1. Creating a new document.	D	D	RE	E	RE	E
2. Entering text.	D	E	RE	E	E	E
3. Moving the cursor.	D	E	E	E	E	E

Key: E: Easy (Performed command without looking it up.)
RE: Relatively Easy (Unable to remember at first but figured it out, without looking.)
D: Difficult (Performed command but looked it up.)
I: Impossible (Never accomplished the task.)

Table 6b

Subject Summary: Computer Based Training
Competence on Revising Text

Questions	Subject's response					
	C1	C2	C3	C4	C5	C6
1. Characters to bold.	D	RE	E	RE	E	E
2. Characters to italic	D	RE	NA	RE	E	E
3. Underlining characters	D	RE	RE	RE	E	E
4. Centering Text.	D	RE	E	RE	E	E
5. Correcting Misspellings	D	RE	RE	RE	RE	RE
6. Indenting paragraphs	D	RE	E	D	D	RE
7. Changing line spacing	D	RE	E	D	RE	RE
8. Creating a new paragraph	D	RE	D	D	RE	D

Key: E: Easy (Performed command without looking it up.)
RE: Relatively Easy (Unable to remember at first but figured it out, without looking.)
D: Difficult (Performed command but looked it up.)
I: Impossible (Never accomplished the task.)

Table 6c

Subject Summary: Computer Based Training
Competence on File Manipulation.

Questions	Subject's response					
	C1	C2	C3	C4	C5	C6
1. Loading a document	D	D	RE	D	D	E
2. Saving a document	D	D	RE	E	D	RE
3. Copying Text	D	D	RE	D	E	E
4. Moving Text	D	D	D	D	D	D
5. Opening Windows	D	D	D	D	D	D
6. Replacing Text	D	D	NA	D	D	RE
7. Undoing Changes	D	D	E	D	RE	E
8. Printing	D	RE	E	D	E	E

Key: E: Easy (Performed command without looking it up.)
RE: Relatively Easy (Unable to remember at first but figured it out, without looking.)
D: Difficult (Performed command but looked it up.)
I: Impossible (Never accomplished the task.)

Instructor Observations :

For Exercise #3 the Computer Based Training group did not remember many of the commands. The CBT group as a whole did not transfer skills they had mastered earlier to Exercise #3. They had the most difficulty with the following areas:

1. The basic ability to type new text wherever the cursor was placed did not transfer to Subjects C1, C2,or C3. They tried to use the insert command. They did not remember that they just had to place the cursor where they wanted the information to go and type.

2. All participants did not remember how to open and close windows.

3. Once in the window command the CBT group did not remember that they could type in the line they wanted to have the window open on, so many ended up with two line windows.

4. They did not remember the copy and move command.

5. Some had trouble remembering the search and the replace command.

Table 7a

Subject Summary: Instructor Based Training
Competence on Creating a Document, Entering Text
and Moving The Cursor

Questions	Subject's response						
	I1	I2	I3	I4	I5	I6	I7
1. Creating a new document.	RE	RE	RE	NA	RE	RE	RE
2. Entering text.	D	E	E	NA	E	E	E
3. Moving the cursor.	RE	E	E	NA	E	E	E

Key: E: Easy (Performed command without looking it up.)
RE: Relatively Easy (Unable to remember at first but figured it out, without looking.)
D: Difficult (Performed command but looked it up.)
I: Impossible (Never accomplished the task.)

NA: Not Available

Table 7b

Subject Summary: Instructor Based Training
Competence on Revising Text

Questions	Subject's response						
	I1	I2	I3	I4	I5	I6	I7
1. Characters to bold.	D	E	E	NA	E	E	E
2. Characters to italic	D	NA	RE	NA	E	E	E
3. Underlining characters	D	E	E	NA	E	E	E
4. Centering Text.	D	RE	E	NA	E	E	E
5. Correcting Misspellings	D	I	RE	NA	E	RE	RE
6. Indenting paragraphs	D	E	E	NA	E	RE	E
7. Changing line spacing	D	E	E	NA	E	E	E
8. Creating a new paragraph	D	E	E	NA	E	RE	E

Key: E: Easy (Performed command without looking it up.)
RE: Relatively Easy (Unable to remember at first but figured it out, without looking.)
D: Difficult (Performed command but looked it up.)
I: Impossible (Never accomplished the task.)

NA: Not Available

Table 7c

Subject Summary: Instructor Based Training
Competence on File Manipulation

Questions	Subject's response						
	I1	I2	I3	I4	I5	I6	I7
1. Loading a document	RE	RE	E	NA	RE	E	E
2. Saving a document	RE	RE	E	NA	E	RE	RE
3. Copying Text	D	RE	RE	NA	D	D	D
4. Moving Text	D	D	D	NA	D	D	D
5. Opening Windows	D	RE	RE	NA	E	D	RE
6. Replacing Text	D	E	RE	NA	D	RE	RE
7. Undoing Changes	D	E	RE	NA	E	RE	RE
8. Printing	RE	E	RE	NA	E	RE	RE

Key: E: Easy (Performed command without looking it up.)
RE: Relatively Easy (Unable to remember at first but figured it out, without looking.)
D: Difficult (Performed command but looked it up.)
I: Impossible (Never accomplished the task.)

NA: Not Available

Instructor Observations:

Overall the Instructor Based Training group remembered commands that they had previously practiced. They remembered the function keys and how to highlight words sentences and paragraphs. The Instructor Based Training performed poorly in the following areas:

1. Subjects I1, I2 could not remember how to change text and correct their misspellings.

2. The move command between windows was difficult for all participants. Some tried to use the glossary commands to save the file but then they could not remember how to call up a file that they had saved.

3. They did not know how to delete old paragraph marks.

Summary of Exercise #3 Time Results:

The Computer Based Training finished in approximately 105 minutes and the Instructor Based Training group required approximately 59 minutes. Table 8a and Table 8b summarize the approximate time each individual needed to complete Exercise #3. Data is listed in descending order according to time.

Table #8a

Computer Based Training
Approximate Time to Complete Exercise #3*

Subject	Time
Subject C3	125 min
Subject C1	120 min
Subject C2	120 min
Subject C5	110 min
Subject C4	90 min
Subject C6	70 min
Average	105 min

* Data is listed in descending order according to time in minutes.

Table #8b

Instructor Based Training
Approximate Time to Complete Exercise #3*

Subject	Time
Subject I4	NA
Subject I1	80 min
Subject I2	80 min
Subject I7	65 min
Subject I3	60 min
Subject I5	35 min
Subject I6	35 min
Average	59 min

* Data is listed in descending order according to time in minutes.
NA: Not Available

DISCUSSION

As the results demonstrate, the Instructor Based Training group mastered overall Word skills to a greater depth then the Computer Based Training group. The discussion that follows will delineate the major areas where the two groups were different.

Instruction Differences:

Use of the Learning Word CBT by the Computer Based Training group resulted in decreased verbal instruction and a decreased use of the overhead and large monitor displays. Their instruction was primarily individual and did not require as much group interaction to understand

concepts. In the Instructor Based Training, the instruction was both verbal and visual. The class worked together to understand concepts and provide feedback in the review sections. When the IBT group was having difficulty on a particular concept, several examples were provided from a variety of approaches. The CBT group was provided only the exercises that exist within the Learning Word program. These differences may explain the lack of mastery in the CBT group.

Background Comparison:

Random assignment of the participants resulted in groups of comparable ability levels and experience. Subject C1 and C2 from the Computer Based Training group and Subject I1 and I4 from the Instructor Based Training group had never worked with a wordprocessor before. Subject I6 had worked with Microsoft Word prior to this course. When looking at the time required for each individual to complete the exercises, it is directly related to how much prior wordprocessing experience they have had.

The new users required more time and responded to the questionnaire with "Difficult" more often then their classmates who had prior experience. Subjects C1, C2, I1 and I4 required the most time to complete all exercises. Subject I6 took the least amount of time to complete the exercises. The time differences between participants who had used some type of wordprocessing experience, other than Microsoft Word, was not significant for the first and second

exercise. Both groups performed at relatively the same amount of speed with similar self critiques. In exercise #3 the gap expands and the Instructor Based Training group performed all tasks at a significantly faster rate. They also had the perception that the tasks were easier than that reported by the Computer Based Training group. For Exercise #3 the entire CBT group had difficulty with the Moving Text, Opening Windows and Replacing Text commands. The IBT group also had difficulty with the Moving Text and Opening Windows commands.

Environment:

The environment in which the instruction took place should also be noted. The lab is designed for the purpose of computer aided instruction (CAI), this may have added to the experience of the IBT group. Data collected in a classroom that is not configured in the same manner may produce slightly different results. The Learning Word CBT being used in a classroom environment may also impact the results. Results may differ if collected in a study of individuals in their own work environments.

Overall Course Evaluation:

The overall course evaluation showed that both groups were satisfied with the instruction, but would have preferred more practice time and a longer course. The participants seemed to agree that the content was covered in a logical order, but the information provided did not always

provide enough depth in order to obtain mastery. The instruction did not cover many of the advanced features of Microsoft Word due to limited time.

Questionnaire:

The exercise questionnaire worked well for evaluating participants self critique for Exercise #1 and Exercise #2. The participants seemed to mark down their actual experience and areas in which they had difficulty. The rating scale was not followed by participants for Exercise #3. Many participants asked questions on the commands yet on the questionnaire they marked that the command was "easy" to perform. The participants idea of help seemed to change as the task level increased.

RECOMMENDATIONS

The following recommendations are the individual instructor comments. They have been included to help improve the overall effectiveness of the Learning Word CBT.

1) Many of the participants within the Computer Based Training group did not realize that they had to leave the Learning Word CBT to begin their own wordprocessing application. A statement within the program that mentioned that they need to exit to the master program would be beneficial.

2) Provide exercises that simulate to a greater extent real life wordprocessing.

The Learning Word CBT would be improved if the practice exercises and "Putting It All Together" were more like problems individuals encounter when beginning their own applications. For example, having the user leave the CBT to try sample exercises that are listed in the back of the manual or having document exercises from various contexts that are saved on the utilities disk that individuals could correct without the help of the prompts. Individuals would then have the practice of loading, correcting and saving files. This would enable each person to truly experience the software.

3) It may be desirable to have two different levels of the Learning Word CBT. A very basic level for truly beginning wordprocessors and the CBT that is currently available for advanced users. The current CBT was fine for people familiar with computers but beginners appear to need a different introduction prior to using the CBT or a more simplistic approach.

4) Providing a prompt to find the cursor immediately would be beneficial. Many of the users could not find the cursor on the screen and were frustrated. A mark at the side of the screen denoting the line that the cursor was on would be beneficial when only one character is highlighted.

5) A chart that would tell them where to turn for the most common errors would be helpful. It may also be beneficial to provide a summary of feedback on the areas that they did not understand immediately so they could review them on their own. If they continue to make the same mistakes then they may need to have alternative help facilities. It is desirable to not just give the answer if they make a mistake, ask them to try again or review.

6) Psychological studies have shown that people can only remember 7 +- 2 ideas or concepts. The Learning Word CBT seemed to bombard people with new concepts before they had completely grasped the old. The summary sections reviewed materials they had just covered but did not provide the links to earlier commands. An overall summary with schemata and exercises outside of the CBT may help users to conceptualize commands before continuing to the next section.

Note: The concept of style sheets was considered to be too advanced for the class and could not be taught within the time provided.

Appendix A

Promotional Flyer

Learn Word Processing
Using Microsoft Word

The Center for Instructional Development and Research (CIDR) will be evaluating various instructional means in the area of word processing. Participants will learn one of the most popular and powerful word processing systems- Microsoft Word on the IBM PC.

Who is able to participate

We are interested in **faculty, staff,** and **graduate students** who are able to attend class twice a week from 10:30-12:30 for three weeks. The first week of class begins October 23rd. Class sizes are limited to 11 participants. There is no cost to qualified students.

If you are interested in learning word processing and in participating in this evaluation, contact Heidi Johnson by October 21st at 543-0751 or drop a line to mailstop DC-07.

Appendix B

Sequence of Instruction

Order of Instruction:

Introduction to the course
Introduction to the lab
Introduction to the computer
Introduction to Wordprocessing:
Lessons

Information covered in the entire course includes:

Word Essentials:

Exploring the Screen

Choosing Commands

About Learning Word

Commands, Choosing

Exploring the screen

Documents, Clearing
Deleting
Printing
Saving
Retrieving

Format,Center & Justify
Indenting
Italics, Bold. etc.
Line Spacing
Speed Formatting
What's Formatting?

Glossary, Creating
Saving

Margins, Changing

In the Learning Word CBT the following were covered via computer animated screens. The Instructor Based Training group was taught using a real keyboard and overhead slides.

10 Basic Keys

spacebar
4 arrows
2 Shift keys- caps lock

tab
backspace
enter

The definition of these keys was verbally provided to all students.

alt
esc
num lock
scroll lock
break
ctrl-alt-del
function keys

Learning Word Menu

Introduction Menu:

The Basics Menu
More Word Skills Menu
Review Index
Quit

Introduction Menu

About Learning Word
Presenting Word: A Demo
Word Essentials Menu
Quit

About Learning Word

About learning Word covers an overview of the steps that you need to take to proceed through learning Word. It covers the use of the spacebar and the control bar.

Present Word: A Demo

This section presents the five major phases to creating a document.

Enter, Revise, Format, Print, Store

Word Essentials Menu

Exploring the screen
Choosing Commands
Selecting text

Exploring the screen

Screen symbols, ? to do next, information of document.

This lesson displays the window and explains the following concepts: what the end mark is, where the command line is located, page #'s, whether you must save your document, name of the file and how much memory is left.

Choosing Commands: Summary

Tab
Spacebar
Right arrow lists responses available on disk
Type a response
Enter
Esc and commands

Selecting Text

Copy, Delete, Format

Selecting a character, word, sentence, paragraph or document

Arrow selections:

F6= sequence of words
F8= word left
F7= word right
F9= sentence
F10=paragraph
shift F10=Whole document

The Basics Menu

Entering
Revising
Formatting
Undoing Changes
Printing
Storing Documents Menu
Getting Help
Putting it all together

Entering

Type, backspace, start new lines, insert, change

Revising

Deleting & Inserting
Scrolling

Deleting & Inserting

Deleting- words,sentences,paragraphs,pages,
move,deleting& reinserting from temporary storage.

Scrolling

Bar on border tells position

up a page	Pgup	1st char	Ctrl Pgup
down a page	Pgdn	last char	Ctrl Pgdn

Formatting

What's formatting
Italics, Bold, Etc
Centering and Justifying
Indenting
Setting Line Spacing
Speed Formatting

What's Formatting

Character: italic-bold-underline-superscript-subscript
Paragraph: Alignment-Indent-Line spacing
Division: Margins- page numbers- page layout

Italics, Bold, Etc

Format character and tab to correct format then press enter.

Centering and Justifying

left, right, center, justify

Indenting

indent a line or a paragraph
ruler for formatting a paragraph

Setting Line Spacing

double, triple, singe, # of lines between paragraphs: the lines between paragraphs is calculated by adding the sum of the number of lines after the first paragraph and before the second paragraph.

Speed formatting

Formatting characters, aligning paragraphs, indenting, line spacing.

Undoing changes

Restore deleted text
Remove typed text
Reverse
copy,delete,insert,format,replace,undo

Printing

information on the printer/ type and paper feed
how to print
page new, print repaginate
>> begin of pg.

Storing Documents Menu

Saving
Retrieving
Clearing
Deleting

Saving

Save, name, revise

Retrieving

load and view

Clearing

Erase screen,
different to delete then to clear
Transfer, clear, all is like quitting but it does not erase from disk

Deleting

Transfer delete is permanent removal of file from the disk.
erases documents.

Getting help

Asking for help
Resuming after getting help
more details in help

Putting it all together

An overview of all of the above.

More Word Skills

Copying & Moving menu
Windows menu
Searching and Replacing
Using the Glossary menu
Numbers, Headers & Margins menu
Adding Footnotes
Setting up tables
Checking Spelling
Creating Form letters : Merge
Formatting with Style menu
Putting it all together
Quit

Copying and moving

copytext in document
move text
delete text and insert elsewhere

Windows

Using windows
Copying and moving windows

Using Windows

View two parts of a document
Work with windows
close

to change windows press F1

Copying & Moving with windows

(Windows) Copy text from one to another
move text from one to another

Searching & Replacing

searching for text
replacing text

Using the Glossary \menu
Creating a Glossary
Saving a Glossary

copy text into glossary
insert from glossary

press F3 - to replace (name) from Glossary with text in glossary

Saving Glossary

Transfer Glossary Save

Page Numbers Headers & Margins

Numbers Pages-
Format Divisions Command

Change Beginning # by F-D-C numbering

Creating Page Headers

F-R Format Running head
and up greater than sign tells that paragraph is header

to create page numbers : type: page and press F3
this inserts the appropriate pg# in the header

Changing Margins

Right, left, top, bottom
determine the size of the paper

format division to change the length and the margins. F-D-P to change the paragraph margins.

Adding footnotes

Add and Delete
Format footnotes

to delete footnotes select footnote and pres. del

Setting up tables

Set a tab delete a tab recognize 4 types move a column in a table by changing tab.

press shift enter to end lines
ends line without beginning new paragraph

press enter to end a paragraph

left, right, center, decimal

Checking Spelling

ESC- Lib Spell

Insert spell disc
Correct add and ignore
type yes to incorporate changes

Appendix C

Samples of Exercise #1, Exercise #2 and Exercise #3

Microsoft Word

Exercise #1

Name: _____
Beginning Time: _____
Ending Time: _____

This exercise will review the following concepts:

Exploring the screen:
Editing a Document:
- Choosing Commands
- Selecting Text
- Entering Text
- Revising Text: Deleting and Inserting
  Scrolling

The overhead diagram displays a Microsoft Word screen. Lable the following parts of the screen shown on the overhead with the correct letter.

WINDOW	_____
ENDMARK	_____
COMMAND MENU	_____
MESSAGE LINE	_____
STATUS LINE	_____
DIVISION MARK	_____

Editing a Document

First:

Place Microsoft Word Program disk 1 of 3 in drive A and your data disk in drive B.

Turn on your computer to Load Microsoft Word.

If the computer is already on and an A> is showing type **Word** and then press ENTER

Choosing commands:

The following paragraphs are saved on your data disk under the file name exone.doc.

To load this file:

Press **ESC**
T for Transfer
L for Load
then type in: **exone.doc**
Press **ENTER**

The Innovation Diffusion Process in Education - Will Computer Based Instruction Survive?

Richard L. Reinhart

Microtel Learning Services

ABSTRACT:

Introducing innovation to our educational system has always been a slow, uncertain process. Computer-based instruction is the lastest of a long line of technologies to face this. There have been many studies of innovation diffusion that reveal a cross-field (educationm entertainment, business) similarity. There are five stages: 1. Awareness; 2. Interest; 3. Evaluation; 4. Trial; 5. Adoption. People and institutions can also be classified as follows: 1. Innovators; 2. Early Adopters; 3. Early Majority; 4. Late Majority; 5. Laggards. Computer-based instruction is basically situated in the Evaluation stage with some limited overrun in the Trial stage. There are several factors that can influence the successful adoption of an innovation outside of its own characteristics. These include timing, advertisements, perceived need and cultural awareness.

Education has always been one of the slowest fields to adopt an innovation. It does not return a good profit and generally is introduced to "spin-off" technology which has succeeded elsewhere. Some of the reasons education is slow is: 1. Low funding: 2. Relatively little invested in Research and Development; 3. Difficult to measure outcomes and evaluate success. We must recognize these factors and how they may affect computer-based instruction as the field of education has witnessed much innovation failure and successful adoption rate that often "lags 25 years behind the best practice".

Please perform the following commands on your document. When you have completed making all of the corrections save your file.

1. Correct the following mispelled words:
   Innovation
   the

2. Change the words "spin-off" in the last paragraph to the word "new"

3. Make the sentence beginning: There are five stages... a new paragraph.

4. Delete the first paragraph.

5. Enter this paragraph in its place.

Introducing innovation to the educational system has always been a slow risky process. It took thirty years from its introduction for early educators to view the chalkboard as essential to teaching (Anderson, 1962).

6. Enter the following conclusion.

The process of introducing, accepting or rejecting a new idea, technology or product is know as innovation diffusion.If we study the process, we learn that systems or ideas that we feel are "obviously superior or necessary" may not succeed on such qualities alone. Sometimes elements that have no relation to the innovation characteristics are key factors that influence success or failure. Examining this process may help us understan the diffusion of computer-based instruction in education and even influence its success.

7. Save your file.

To save your file:
Press **ESC**
T for Transfer
S for Save
Press **Enter**

Please fill out the following questionaire in regards to how easy it was for you to remember how to complete each task. Comments in regards to the instruction of these commands are also appreciated. If you have suggestions as to how the instruction could be improved, please note these in the area provided. The following scale should be used to rate each command:

E: Easy (Performed command without looking it up.)
RE: Relatively Easy (Unable to remember at first but figured it out, with out looking.)
D: Difficult (Performed command but looked it up.)
I: Impossible (Never accomplished the task.)

Circle the appropriate response.

1. The areas of the screen:

WINDOW	E	RE	D	I
ENDMARK	E	RE	D	I
COMMAND MENU	E	RE	D	I
MESSAGE LINE	E	RE	D	I
STATUS LINE	E	RE	D	I
DIVISION MARK	E	RE	D	I
2. Loading a document:	E	RE	D	I
3. Correcting mispelled words.	E	RE	D	I
4. Creating a new paragraph.	E	RE	D	I
5. Deleting a paragraph.	E	RE	D	I
6. Entering text.	E	RE	D	I
7. Moving the cursor.	E	RE	D	I
8. Saving the document.	E	RE	D	I

Areas that you had difficulty with that I did not mention above please list below. If you have additional comments, include these in the space remaining or on the back.

Comments:_____
_____
_____

Microsoft Word

Exercise #2

Name: _____
Beginning Time: _____
Ending Time: _____

This exercise will review the following concepts:

Formatting: Changing the look
What's formatting?

Formating Characters:

Changing the character format
Italics, Bold, Etc.

Formatting Paragraphs:

Centering and Justifying
Indenting
Setting Line Spacing

Editing a Document

First:

Place Microsoft Word Program disk 1 of 3 in drive A
and your data disk in drive B.

Turn on your computer to Load Microsoft Word.

If the computer is already on and an A> is showing
type **Word** and then press ENTER

Practicing Formatting:

The following paragraphs are saved on your data disk under the file name extwo.doc.

To load this file:

Press **ESC**
T for Transfer
L for Load
then type in: **extwo.doc**
Press **ENTER**

Character Format

The following paragraph displays the special character formats that you can perform in Microsoft Word. Take a moment to fix the text according to the directions below.

NEW RELEASES

Baker's Press has just released two new books, How To Bake a Better Pie in Two Quick Steps, and My Mom and Me by Adeline Baker. Both books have received rave reviews.

" Better Baking is possible with How to Bake A Better Pie" Steve Sampson. The New York Times

If you are interested in ordering, please send $5.95 to Baker's Press So 200 Clock Street Seattle WA 98107.

Please perform the following commands on your document. When you have completed making all of the corrections save your file.

1. Make Baker's Press Bold faced.

2. Underline and Bold face these titles, in paragraph one.
   How to Bake A Better Pie in Two Quick Steps
   My Mom and Me by Adeline Baker

3. Change the quote from the New York Times " Better Baking is possible with How to Bake A Better Pie" Steve Sampson. to italics.

4. Indent the first line five spaces in the first and third paragraphs .

5. Center the second paragraph.

6. Double space the first and third paragraph.

To save your file:
Press **ESC**
T for Transfer
S for Save
Press **Enter**

Please fill out the following questionaire in regards to how easy it was for you to remember how to complete each task. Comments in regards to the instruction of these commands are also appreciated. If you have suggestions as to how the instruction could be improved, please note these in the area provided. The following scale should be used to rate each command:

E: Easy (Performed command without looking it up.)
RE: Relatively Easy (Unable to remember at first but figured it out, with out looking.)
D: Difficult (Performed command but looked it up.)
I: Impossible (Never accomplished the task.)

Circle the appropriate response.

1.	Changing Character to Bold.	E	RE	D	I
2.	Changing Character to Italic	E	RE	D	I
3.	Underling Characters.	E	RE	D	I
4.	Indenting paragraphs.	E	RE	D	I
5.	Changing the line spacing.	E	RE	D	I
6.	Centering text.	E	RE	D	I

Areas that you had difficulty with that I did not mention above please list below. If you have additional comments, include these in the space remaining or on the back.

Comments: _____
_____
_____

Microsoft Word

Exercise #3

Name: _____
Beginning Time: _____
Ending Time: _____

This exercise will review the following concepts:

Exploring the screen:
Creating a Document
Editing a Document:
- Choosing Commands
- Selecting Text
- Entering Text
- Revising Text: Deleting and Inserting
  Scrolling

Formatting: Changing the look
- **Characters:**
  - Changing the character format
  - Italics, Bold, Etc.
- **Paragraphs:**
  - Centering and Justifying
  - Indenting
  - Setting Line Spacing

Copying and Moving
Windows: Two views at once
Searching and Replacing
Using the Glossary
Undoing Changes
Printing
Storing Documents

Editing a Document

First:

Place Microsoft Word Program disk 1 of 3 in drive A
and your data disk in drive B.

Turn on your computer to Load Microsoft Word.

If the computer is already on and an A> is showing
type **Word** and then press ENTER

Step one:

Create the following file and save it on your data disk. The file should be saved as **exthree.doc**

Type the following document just as it is, centering and underlining text as it appears on this page.

Technology and Man's Future

By Albert H. Teich

Introduction:

Technology is more than just machines. It is a pervasive, complex system whose cultural, social, political, and intellectual elements are manifest in virtually every aspect of our lives. Small wonder, then, that it has attracted the attention of such a large and diverse group of writers and commentators. A small sampling of the range of writings on the social dimensions of technology is contained in this first section of Technology and Man's Future. All of the writers represented here are attempting to understand-from one perspective or another- these social dimensions of technology. Little else ties them together. Their common object is not so much to prescribe particular courses of action as it is to explore the conceptual, metaphysical issues underlying technology-society relations. But their points of view are vastly different. On the whole, the articles in this section raise more questions than they answer.

Although no one has bothered to take a survey, it is probably safe to assume that many, if not most, of the Seabrook demonstrators had seen Star Wars and, with millions of others, had been entranced by its range of technological imagination and had viewed it as essentially unrelated to the Seabrook affair.

Please perform the following commands on your document. When you have completed making all of the corrections save your file.

Make the following changes:

1. Correct your document for any misspelled words.

2. Insert the following paragraph as paragraph two.

Today, more than ever, Americans are ambivalent about technology. In 1978, more than 20,000 people came together in Seabrook, New Hampshire, to demonstrate their opposition to the construction of a nuclear reactor. This nonviolent protest was perhaps the most dramatic antitechnology demonstration in American history. During the same period, George Lucas's science fiction film Star Wars, an intensely technological fantasy, opened to record crowds and soon became the biggest money-making film of all time.

3. Combine the third paragraph to the second paragraph. The paragraph beginning with, Although no one has bothered....should be added onto the end

4. Move the second paragraph to the beginning of the page, to make it the first paragraph.

5. In each paragraph indent the first line five spaces

6. Double space each paragraph.

7. Save your file.

8. Open up a second horizontal window at line 8.

9. Load file exfour.doc into window 2.

10. Using the copy and move commands, Insert paragraph one (the conclusion) from window 2 into window 1. This paragraph is the conclusion to exthree.doc.

11. Change the word social throughout the document to societal, by using the replace command.

12. Undo your last change.

13. Print your document.

14. What does your message line say when your file is printing?

Please fill out the following questionaire in regards to how easy it was for you to remember how to complete each task. Comments in regards to the instruction of these commands are also appreciated. If you have suggestions as to how the instruction could be improved, please note these in the area provided. The following scale should be used to rate each command:

E: Easy (Performed command without looking it up.)
RE: Relatively Easy (Unable to remember at first but figured it out, with out looking.)
D: Difficult (Performed command but looked it up.)
I: Impossible (Never accomplished the task.)

Circle the appropriate response.

1. Creating a new document.	E	RE	D	I
2. Entering Text.	E	RE	D	I
3. Moving the cursor.	E	RE	D	I

Revising Text.

1. Changing Character to Bold.	E	RE	D	I
2. Changing Character to Italic	E	RE	D	I
3. Underling Characters.	E	RE	D	I
4. Centering text.	E	RE	D	I
5. Correcting mispelled words.	E	RE	D	I
6. Indenting paragraphs.	E	RE	D	I
7. Changing the line spacing.	E	RE	D	I
8. Creating a new paragraph.	E	RE	D	I

File Manipulations:

1. Loading a document.	E	RE	D	I
2. Saving the document.	E	RE	D	I
3. ing text.	E	RE	D	I
4. g text.	E	RE	D	I
ing Windows.	E	RE	D	I
6. Re acing text.	E	RE	D	I

Continued:

7. Undoing Changes.	E	RE	D	I
8. Printing	E	RE	D	I

Areas that you had difficulty with that I did not mention above please list below. If you have additional comments, include these in the space remaining .

Comments:_____
_____
_____
_____
_____

Appendix D

Copy of Background Survey Sheet

Microsoft Word

Background Information

The following information will be used in evaluating the data from this Microsoft Word course. The data will be used to help facilitate our instruction and determine the audience we are currently serving.

Name: _____

Department: _____ **Sex:** M____F____

Mail stop: _____ **Age:** 16-24 25-34 35-44 44-54 55-64 65-74

Phone #: _____

Position:

Faculty: _____ Staff: _____
Graduate Student: _____ Other: _____

Computing Experience

1. Have you used a computer before?

Yes: _____ No: _____

If yes please list the type of computer used: _____

2. Have you used a wordprocessor before?

Yes: _____ No: _____

a. If yes, which ones? _____

b. If yes, for what tasks? _____

c. If yes, for approximately how many hours/week? _____

d. If no, what might you use it for? _____

Appendix E

Copy of Final Evaluation Instrument

Workshop Questionaire

Part of the process of developing a course involves a formal evaluation. Information from the following questionaire will be used to assist our team of designers to improve this course. Your responses to the following items are appreciated.

Please indicate the following:

(1) Workshop location _____
(2) How many hours did it take you to go through the course (excluding breaks)? _____

Please use the following scale to respond to each item.

SA - Strongly Agree
A - Agree
N - Neither Agree nor Disagree
D - Disagree
SD - Strongly Disagree
NA - Not Applicable

Please circle the appropriate response for each question.

OBJECTIVES

I understood the objectives of this course.	SA A N D SD NA
The objectives helped me to understand what I had to learn.	SA A N D SD NA

CONTENT

The content of this course was given in a logical order.	SA A N D SD NA
The course was given at the right level of depth.	SA A N D SD NA
There was enough information given in this course.	SA A N D SD NA
The language used in this course was difficult to understand.	SA A N D SD NA
The examples were helpful to understand the concepts.	SA A N D SD NA
There were enough examples given.	SA A N D SD NA
The summaries helped me to remember important points.	SA A N D SD NA
There were enough summaries given.	SA A N D SD NA
Directions for assignments were clear.	SA A N D SD NA

QUESTIONS

What did you like the most about the course?

What did you dislike most about the course?

What parts were confusing?

What parts were boring?

Did you have any specific problems operating the terminal?

Does the information in this course help you to do your job better? Why or why not?

List any resources that might be used in this course.

Did you have any additional comments about this course?